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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,014	02/11/2004	James A. Laugharn JR.	CVRS-P04-001	2221

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Patent Group
Ropes & Gray LLP
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EXAMINER

SOOHOO, TONY GLEN

ART UNIT	PAPER NUMBER
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1723

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/777,014

Applicant(s)

LAUGHARN ET AL.

Examiner

Tony G. Soohoo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 47-147 is/are pending in the application.
- 4a) Of the above claim(s) 63-65, 80-140, 142, 144, 145 and 147 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 47-62, 66-79, 141, 143 and 146 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The pending claims remaining for consideration and examination upon the merits are claims 47-62, 66-71, and 72-79, and 141, 143, 146.

Specification

2. Applicant is reminded to continue to update the status of any priority parent applications, if necessary.

Claim interpretation

3. Claims 47, 48, 49, 50, 51, 52, and new claims 141, 143, 146 recite "one focused acoustic field" or refers to a "focused acoustic field". **Applicant also describes the terms Focal zone and focal point as: "[the phrase] 'Focal zone' or 'focal point' as used herein means an area where sonic energy converges and/or impinges on a target, although that area of convergence is not necessarily a single focused point" (emphasis added).**

The definition as defined by the Merriam-Webster online dictionary defines "focus"

as: **focus**

Function: *verb*

Inflected Form(s): fo-cused also fo-cussed; fo-cus-ing also fo-cus-sing

transitive senses

1 a : to bring into focus b : to adjust the focus of (as the eye or a lens)

2 : to cause to be concentrated <focused their attention on the most urgent problems>


3 : to bring (as light rays) to a focus : **CONCENTRATE**

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intransitive senses1 : to come to a focus : **CONVERGE**

2 : to adjust one's eye or a camera to a particular range

3 : to concentrate attention or effort

- fo·cus·able  -k&-s&-b&l/ adjective

- fo·cus·er noun

During patent examination, the claims are given the broadest reasonable interpretation consistent with the specification. See *In re Morris*, 127 F.3d 1048, 44 USPQ2d 1023 (Fed. Cir. 1997). In this case, the term "focused" is deemed to encompass a directional impingement convergence of the field however there is no requirement of a precise single focal point, but merely bringing the field into a convergent concentration direction which may also encompass a focal zone of non-precise focal point, as evidenced by claim 49 of a **very large** focal zone and in claim 62 by the use of plural transducers directed to a focal zone (i.e. in a converging direction), **and applicants own definition of "focal zone" and "focal point" in the specification as "an area where sonic energy converges and/or impinges on a target."** (emphasis added) . It is noted that the use of the alternate language "or" in the phrase "and/or" the broadest interpretation encompasses merely impinging direction upon a target, and not necessarily a single focal point.



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these terms, as well as any other type of energy that has similar characteristics to sonic energy. "Focal zone" or "focal point" as used herein means an area where sonic energy converges and/or impinges on a target, although that area of convergence is not necessarily a single focused point.

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The "PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in applicant's specification.").

While the claims of issued patents are interpreted in light of the specification, prosecution history, prior art and other claims, this is not the mode of claim interpretation to be applied during examination. During examination, the claims must be interpreted as broadly as their terms reasonably allow. In re American Academy of Science Tech Center, **>367 F.3d 1359, 1369, 70 USPQ2d 1827, 1834 (Fed. Cir. 2004)< (The USPTO uses a different standard for construing claims than that used by district courts; during examination the USPTO must give claims their broadest reasonable interpretation.). This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification.

4. Independent parent claim 47 and its depending claim recites "wherein the energy source is a single transducer". The claim is of an open construction by the use of "comprising:". The depending claim 62 further recites "the acoustic energy source includes a plural of acoustic transducers for providing the plurality of the focused acoustic fields to the one or more samples". Thus the scope of claim 47 does not provide a negative limitation of an exclusion to the provision of a single transducer which fully provide the at least one focused acoustic field(s).

5. Claims 66-79 attempt to claim the material which is used in the apparatus by the direct recitation of "further comprising one or more samples". The "samples" are the material in which the elements of the apparatus "for treating one or more samples" acts upon once the device is operated. Evidence to support such an interpretation is by the preamble of the independent claim 47 which states: "An apparatus **for treating one or more samples** comprising:" (emphasis added). The recitation of particular sample in the depending claim only clarifies the intended use and the environment and does not constitute any structural differentiation of the claimed elements of (a) reaction vessel and (b) an acoustic energy source as defined in the body of the claim(s). Thus, the claims attempt to claim the material worked upon by the device. Applicant's remarks of 11/20/2006, on page 14 is unpersuasive. Accordingly, the language of claims 66-79 does not structurally distinguish or further limit the scope of the invention and merely provides a discussion of particulars to the intended use of the device as afforded in the preamble of the claim(s).

6. Claims 141 (independent claim), and dependent claims 62, 145-147 recite "inlet for continuously transporting [samples]" and "outlet for continuously transporting [samples]". The recitation is read as merely requiring an inlet and outlet structure which is capable to function for an operation continuous transport function, and has been afforded little structural distinction to the claim.

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7. Note: The MPEP states
MPEP 2115

**Material or Article Worked Upon by Apparatus
MATERIAL OR ARTICLE WORKED UPON DOES NOT LIMIT APPARATUS CLAIMS**

"Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969).

Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA

1963)). In *In re Young*, a claim to a machine for making concrete beams included a limitation to the concrete reinforced members made by the machine as well as the structural elements of the machine itself. The court held that the inclusion of the article formed within the body of the claim did not, without more, make the claim patentable.

In *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967), an apparatus claim recited "[a] taping machine comprising a supporting structure, a brush attached to said supporting structure, said brush being formed with projecting bristles which terminate in free ends to collectively define a surface to which adhesive tape will detachably adhere, and means for providing relative motion between said brush and said supporting structure while said adhesive tape is adhered to said surface." An obviousness rejection was made over a reference to Kienzle which taught a machine for perforating sheets. The court upheld the rejection stating that "the references in claim 1 to adhesive tape handling do not expressly or impliedly require any particular structure in addition to that of Kienzle." The perforating device had the structure of the taping device as claimed, the difference was in the use of the device, and "the manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself." Note that this line of cases is limited to claims directed to machinery which works upon an article or material in its intended use. It does not apply to product claims or kit claims (i.e., claims directed to a plurality of articles grouped together as a kit).

"[A]pparatus claims cover what a device *is*, not what a device *does*" (emphasis in original) *Hewlett-Packard v. Bausch & Lomb Inc.* 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

"Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 62, 141, 146, are rejected under 35 U.S.C. 103(a) as being unpatentable over Murry 3614069 in view of Fitzgerald 2585103 (newly cited).

The reference to Murry 3614069 teaches a reaction vessel 10 with walls 12, 13, in which Murry shows that one may place acoustic transducers 14, 16 connected to the walls 13, 12, see column 5, line 59-60 and as seen, in figure 1 which is spaced away from the sample 11, and which does not touch the liquid (sample) inside the walls of the reaction vessel. The transducers are placed facing one another in an arrangement so as to provide a converging acoustic field along an area about a plane in the vessel. Thus it can be said that the two transducer elements comprises at least one acoustic source are both are focused in a common direction to a center target plane impingement area along the center of the reaction vessel 10 to provide a reaction zone.

There is also a controller 17, 21 may be provided to control corresponding ultrasonic transducers 14, 16 to the frequency of low frequency ultrasonic 10 kilohertz, column 4, line 29 through a high frequency application of up to 10 to 400 megahertz, column 4, line 41, to control the optimization of the production effect of the cavitation, mixing and emulsification of the corresponding fluid, see column 4, lines 32-48. Thus is a finding of fact that the transducers of Murry is structurally capable with a control 17, 21 of operating between the ranges of 100 kilohertz and 100 megahertz if so desired, so that production effect of the cavitation, mixing and emulsification of the corresponding fluid is optimized. Applicant is reminded that the instant claims are apparatus claims

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and not method claims. The examiner has pointed out the structure fully capable of such operation as recited by the structure of applicants' "acoustic energy source".

Thus, the Murry reference discloses all of the recited subject matter as defined within the scope of the claims with the exception of having an inlet and outlet for flow of the sample fluid 11 into and out of the vessel 10. It is noted that Murry teaches also teaches an embodiment with a reaction vessel 101 and inlet 102 and outlet 103, figure 6.

The Fitzgerald 2585103 reference teaches that a reactor apparatus with a vessel 39, 40, 41, may have an inlet left of 39, and outlet right side pointing arrow in figure 1, and figure 3 whereby the walls form a conduit 51 in figure 3 for a flow into and out of the vessel, and may have further at least a single plural ultrasonic transducers 52 placed about the pipeline vessel 51 in a focused field arrangement of the field (to the extent that the acoustic energy source(s) is directed to impinge upon the focal point of the pipeline vessel 15) thereby providing a central focus region inside the volume of the container and having a controller 25 to excite a reaction in the vessel conduit.

In view of the teaching of Fitzgerald 2585103. that a pipeline vessel may have inlets and outlets to provide a convenient feed and dispensing of the fluid inside the reaction vessel, it is deemed that it would have been obvious to one of ordinary skill in the art to substitute for the reaction vessel 10 with a pipeline vessel with an inlet and outlet so that reacted samples or liquid or (sample material suspension in liquid) may be easily moved into and out of the vessel.

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With regards to claim 62, to the use of plurals acoustic transducers to provide plural acoustic fields, in light of the showing of the Fitzgerald 2585103, the use of plural acoustic energy sources to provide a focused acoustic field, It is deemed that it would have been obvious to one of ordinary skill in the art to provide and duplicate multiple transducers as shown by Fitzgerald, elements 52, and Murry figure 3 and 3, elements 41a-f, or 56a-h, and generators 52-54 so as to provide a more precise field of application of the acoustic energy.

10. Claims 47-49, 51-52, 66-79 and 143 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitzgerald 2585103 in view of Murry 3614069.

The Fitzgerald 2585103 reference teaches that a reactor apparatus with a vessel 39, 40, 41, may have an inlet left of 39, and outlet right side pointing arrow in figure 1, and figure 3 whereby the walls form a conduit 51 in figure 3 for a flow into and out of the vessel, and may have further at least a single plural ultrasonic transducers 52 placed about the pipeline vessel 51 in a focused field arrangement of the field (to the extent that the acoustic energy source(s) is directed to impinge upon the focal point of the pipeline vessel 15) thereby providing a central focus region inside the volume of the container and having a controller 25 to excite a reaction in the vessel conduit.

The Fitzgerald 2585103 reference discloses all of the recited subject matter as defined within the scope of the claims with the exception of having the ultrasonic transducer and controller providing a field frequency of about 100 kHz to about 100 MHz, and whereby the source is a single transducer (claim 47).

The reference to Murry 3614069 teaches that a controller 17, 21 may be provided to control corresponding ultrasonic transducers 14, 16 to the frequency of low frequency ultrasonic 10 kilohertz, column 4, line 29 through a high frequency application of up to 10 to 400 megahertz, column 4, line 41, to control the optimization of the production effect of the cavitation, mixing and emulsification of the corresponding fluid, see column 4, lines 32-48.

In view of the teaching of Murry, it is deemed that it would have been obvious to one of ordinary skill in the art to modify the controller and transducer of the Fitzgerald 2585103 reference to provide ultrasonic transducers and controller to produce ultrasonic frequencies of 10 kilohertz through up to 10 to 400 megahertz, so that production effect of the cavitation, mixing and emulsification of the corresponding fluid is optimized.

With regards claims 48-49, to the size of the focused field provided by the ultrasonic transducers focus zone being smaller (claim 48) or larger (claim 49) than the reaction vessel, it is old and well known place field transducers in a focus arrangement and that the focus is a direct variable to the location of the amount of energy provided by the focused field. Accordingly, it is deemed that it would have been obvious to one of ordinary skill in the art to move the placement of the ultrasonic transducers to an appropriate arrangement to provide an optimal focus size in the provision of the ultrasonic energy to the vessel for efficient mixing, or processing of the fluid, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

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With regards to claims 51-52, note the processor of Fitzgerald 2585103 or the processor Murry 3614069 as modified which is deemed to be able to be controlled in the manner recited in the claims.

With regards to claims 66-79, the particular material to be used in the device is does not provide any patentable distinction to the elements claimed in the apparatus.

[A]pparatus claims cover what a device *is*, not what a device *does*" (emphasis in original) *Hewlett-Packard v. Bausch & Lomb Inc.* 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). "Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969).

11. Claims 50, and 53-61, are rejected under 35 U.S.C. 103(a) as being unpatentable over Fitzgerald 2585103 in view of Murry 3614069 as applied to claim 47 above, and further in view of Peltzer 5993671.

The Fitzgerald 2585103 reference as modified by Murry discloses all of the recited subject matter as defined within the scope of the claims with the exception of (Claim 50) a controller to control flow of sample into and out of the flow of vessel; and alternately with the exception of (Claim 54-61) a respective controller and sensor having feed back on the state of the treatment.

The reference to Peltzer 5993671 teaches a mixing system whereby a controller is provided to control both the feed and output flows by the use of valves 20, 22, 24.

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Also the reference teaches the use of sensors 60, 62, 64, 80, 82, 84 which provides a feedback to the state of the treatment in the mix chamber 12.

In view of the teaching of Peltzer 5993671, it is deemed that it would have been obvious to one of ordinary skill in the art to provide for the device of Fitzgerald 2585103 with a controller with valves connected at the input and output so as to provide a more precise control of the mixture ratio to be processed, and further provide a sensor in order to monitor the state of the treatment of the mixture in the mixing chamber. With regards to particular type of sensor to be used, it is old and well known in the art of sensor devices that various sensors may be provided to monitor a desired characteristic, accordingly, it is deemed that it would have been obvious to one of ordinary skill in the art to substitute and provide any commonly known sensor in correspondence to the desired characteristic which is to be monitored.

Response to Arguments

12. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents disclose acoustic application of a field to a vessel: Beach et al 6042556, Wang et al 5834648, and 5631425, Towne 2916265, Loomis et al 1734975, and Cellitti et al 3481186.

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The following non-patent literature discusses sonic field application to a vessel:

"Early experience with high-intensity focused ultrasound for the treatment of benign prostatic hypertrophy", Sullivan et al, British Journal of Urology, dated 1997, 79, page 172-176.

"A prototype of a 500kHz ultrasonic Matricial Device: Beam Scanner, Application to in-vivo heel bone quantitative characterization", Defontaine et al, 1999 IEEE Ultrasonics Symposium, dated 1999, pages 1585-1588.

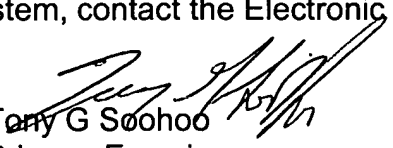
"Some applications of Ultrasonics", Brockelsby, J. SCI. INSTRUM., dated 1963, Volume 40, pages 153-156.

"A new method for the generation and use of focused ultrasound in experimental biology", as submitted on July 06, 1942, Lynn et al., The Journal of General Physiology, Volume 26, The Rockefeller University Press, pages 179-193, copyright 1942.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony G. Soohoo whose telephone number is (571) 272 1147. The examiner can normally be reached on 8AM-5PM, Tue-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Tony G Soohoo
Primary Examiner
Art Unit 1723